

## 1. C Programming

\*No Deliverables\*

## 2. Displaying and Exporting Images in Python

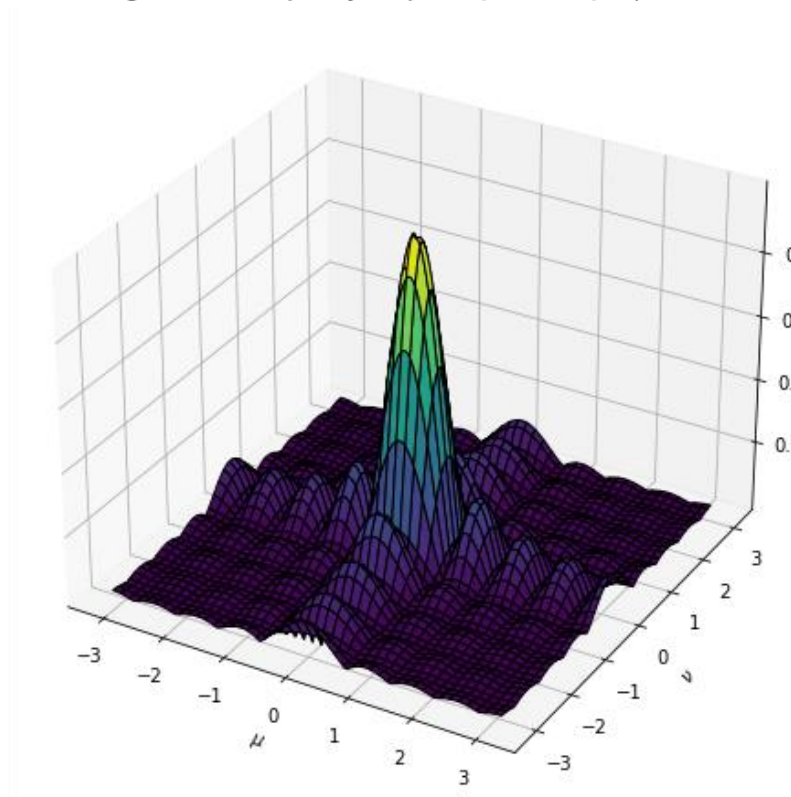
\*No Deliverables\*

## 3. FIR Low Pass Filter

1. Derivation of  $H(e^{j\mu}, e^{j\nu})$ : \*See Next Page\*

2. Plot of  $|H(e^{j\mu}, e^{j\nu})|$

Magnitude of Frequency Response  $|H(e^{j\mu}, e^{j\nu})|$  vs  $\mu$  and  $\nu$



3. Color image *img03.tif*



4. The filtered image *color.tif*



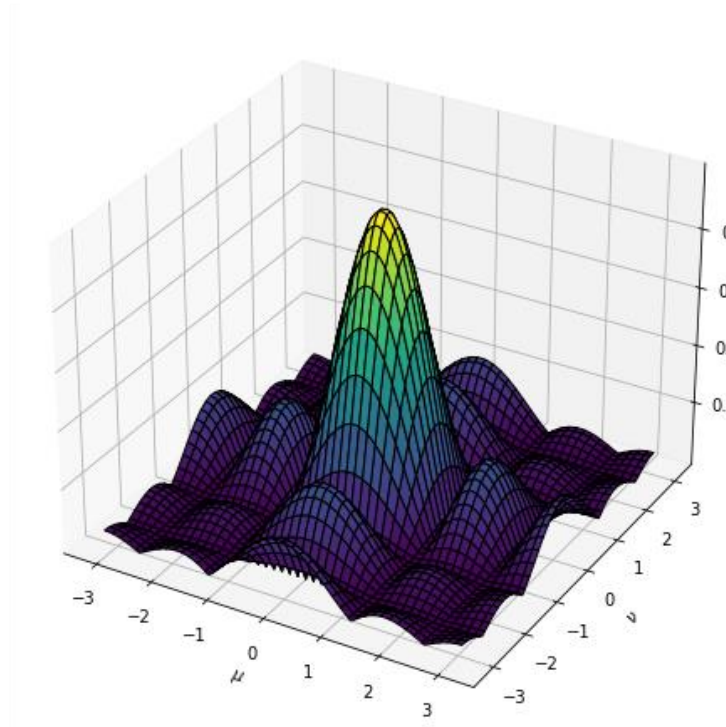
5. Listing of C Code: \*See Next Page\*

## 4. FIR Sharpening Filter

1. Derivation of  $H(e^{j\mu}, e^{j\nu})$ : \*See Next Page\*
2. Derivation of  $G(e^{j\mu}, e^{j\nu})$ : \*See Next Page\*

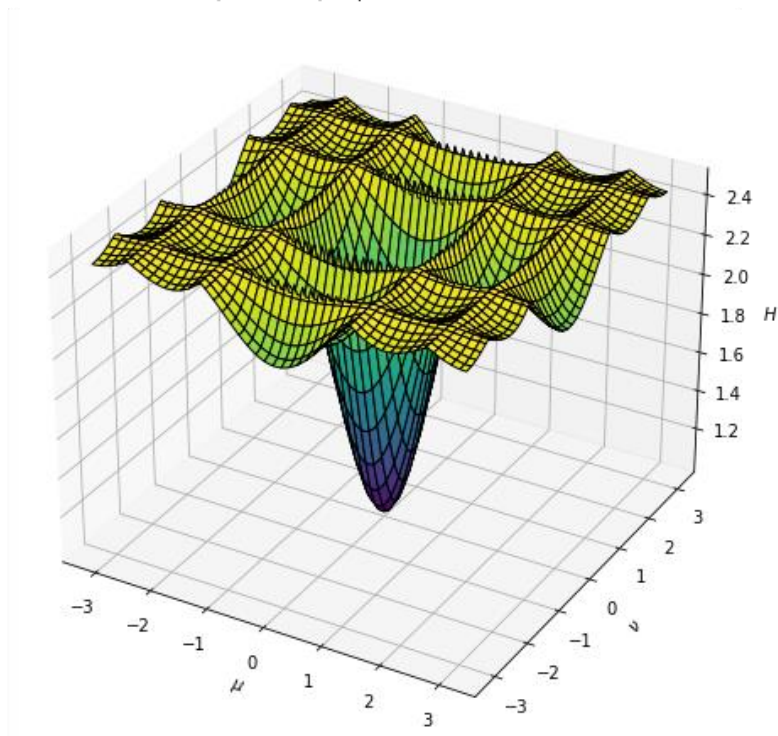
3. Plot of  $|H(e^{j\mu}, e^{j\nu})|$

Magnitude of Frequency Response  $|H(e^{j\mu}, e^{j\nu})|$  vs  $\mu$  and  $\nu$



4. Plot of  $|G(e^{j\mu}, e^{j\nu})|$  for  $\lambda = 1.5$

$|G(e^{j\mu}, e^{j\nu})|$  vs  $\mu$  and  $\nu$  at  $\lambda = 1.5$



5. Input color *imgblur.tif*



6. Output sharpened color image, *sharpened.tif*, for  $\lambda = 1.5$



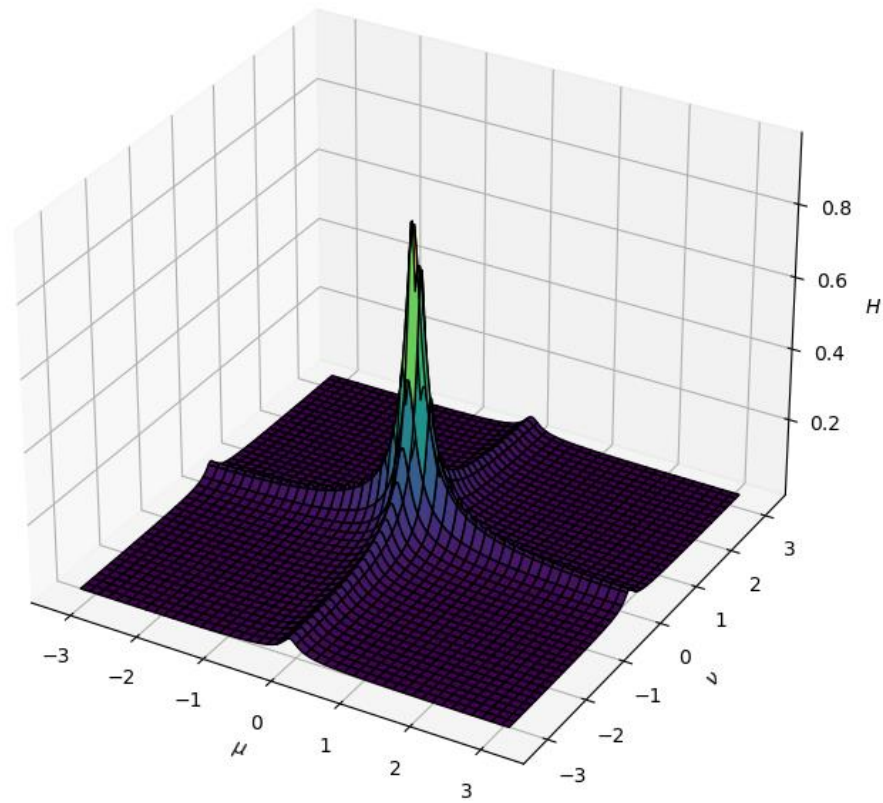
7. Listing of C Code: \*See Next Page\*

## 5. IIR Filter

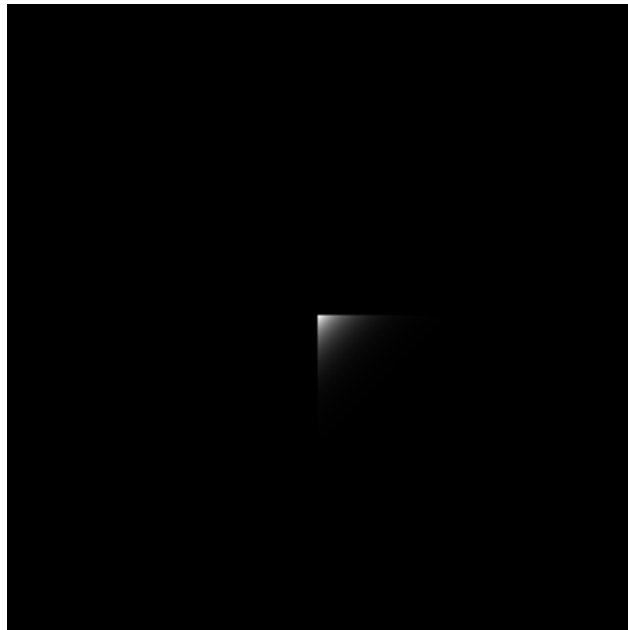
1. Derivation of  $H(e^{j\mu}, e^{j\nu})$ : \*See Next Page\*

2. Plot of  $|H(e^{j\mu}, e^{j\nu})|$

Magnitude of Frequency Response  $|H(e^{j\mu}, e^{j\nu})|$  vs  $\mu$  and  $\nu$



3. Image of the point spread function (PSF)





4. Filtered output color image, *filtered.tif*



5. Listing of C Code: \*See Next Page\*